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Glycyrrhiza

dicyclohexylamine salt of trifluoroacetylglycylglycine: Weygand, Reiber, *Ber.* 88, 26 (1955).

Crystals from 'dil. alc.' Crystal shape described as small tetrahedral leaves with a lustrous ball in center. Dec 262-264°, pK_1 3.12; pK_2 8.17. Heat of combustion: 472.4 kcal/mole. Soluble in hot water, slightly sol in ethanol. Practically insol in ether.

Hydrochloride, $C_4H_8N_2O_3 \cdot HCl \cdot H_2O$; crystals from water + ethanol.

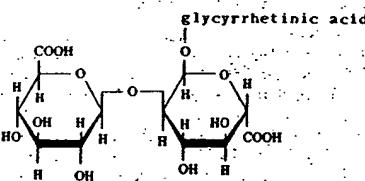
Ethyl ester hydrochloride, crystals from abs ethanol, dec 182°.

USE: In the synthesis of more complicated peptides.

4400. Glycyrrhiza. Licorice; liquorice; sweet root. Dried rhizome and roots of *Glycyrrhiza glabra* L. var. *typica* Regel & Herder (Spanish licorice), or of *G. glabra* L. var. *glandulifera* (Waldst. & Kit.) Regel & Herder (Russian licorice), or of other varieties of *G. glabra* yielding a yellow and sweet wood. *Leguminosae*. Habit. Southern Europe to Central Asia. Constit. 6-14% glycyrrhizin (the glucoside of glycyrrhetic acid), asparagine, sugars, resin. Used chiefly in the form of glycyrrhiza syrup. *Incompat.* Acids, metallic salts.

USE: Extract and syrup as pharmaceutic aids (flavor and flavored vehicles).

4401. Glycyrrhetic Acid. *20β-Carboxy-11-oxo-30-nor-olean-12-en-3β-yl-2-O-β-D-glucopyranuronyl-α-D-glucopyranosiduronic acid*; glycyrrhizin; glycyrrhizic acid; glycyrrhetic acid glycoside. $C_{44}H_{64}O_{16}$; mol wt 822.92. C 61.30%, H 7.59%, O 31.11%. Extraction from *Glycyrrhiza glabra* L., *Leguminosae*: Karrer, Chao, *Helv. Chim. Acta* 4, 100 (1921); Ruzicka, Louenberger, *ibid.* 19, 1402 (1936). From commercial glycyrrhizium ammoniacale: Tschirch, Cederberg, *Arch. Pharm.* 245, 97 (1907); Voss *et al.*, *Ber.* 70, 122 (1937). Revised method of isoln: Conn, Conn, *J. Lab. Clin. Med.* 47, 20 (1956). Structure: Lythgoe, Trippett, *J. Chem. Soc.* 1950, 1983. Alternate view: Marsh, Levvy, *Biochem. J.* 63, 9 (1956). Review: Nieman, *Chem. Weekbl.* 48, 213 (1952). Synthesis of derivatives: Brieskorn, Sax, *Arch. Pharm.* 303, 905 (1970).

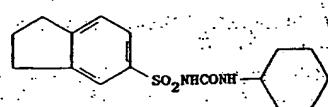


Crystals from glacial acetic acid. Intensely sweet taste. $[\alpha]_D^{25} +46.2^\circ$ (c = 1.5 in alc). Freely sol in hot water, alcohol; practically insol in ether.

Ammonium glycyrrhizinate pentahydrate, $C_{44}H_{65}NO_{16} \cdot 5H_2O$; needles from 75% aqueous ethanol, decmp 212-217°. $[\alpha]_D^{25} +46.9^\circ$ (c = 1.5 in 40% ethanol). uv max: 248 nm (ε 11,400). Sol in ammonia water, glacial acetic acid.

Dipotassium salt, $C_{42}H_{60}K_2O_{16}$. *Rizinsan K2 A2*.

4402. Glyhexamide. *N-[(Cyclohexylamino)carbonyl]-2,3-dihydro-1H-indene-5-sulfonamide; 1-cyclohexyl-3-(5-indanylsulfonyl)urea; 1-cyclohexyl-3-(5-hydridene-5-sulfonyl)urea*; SQ 15860; Subose, $C_{16}H_{22}N_2O_8S$; mol wt 322.45. C 59.60%, H 6.88%, N 8.69%, O 14.89%, S 9.95%. Prepd from hydridene-5-sulfonamide and cyclohexyl isocyanate: Hoehn, Breuer, U.S. pat. 3,097,242 (1963 to Olin Mathieson). Clinical pharmacology: Grinnell *et al.*, *Am. J. Med. Sci.* 253, 312 (1967).

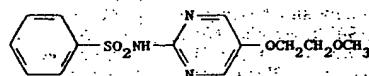


Crystals from 70% acetone, mp 153-155°.

USE: Antidiabetic.

4403. Glymidine. *N-[5-(2-Methoxyethoxy)-2-pyrimidinyl]benzenesulfonamide; 2-benzenesulfonamido-5-(β-meth-*

oxyethoxy)pyrimidine; glycodaizine. $C_{13}H_{15}N_3O_8S$; mol wt 309.35. C 50.47%, H 4.89%, N 13.58%, O 20.69%, S 10.37%. Prepn: Belg. pat. 609,270 (1962-1966 to Schering, AG); Güttsche *et al.*, *Arzneimittelforsch.* 14, 373 (1964). Series of articles on pharmacology: *ibid.* 377-412. Activity: Losert *et al.*, *ibid.* 23, 1251 (1973). Metabolism: Soyfer *et al.*, *Chim. Ther.* 5, 441 (1970).

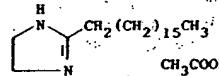


Crystals, mp 152-154°. Soln in ethanol: 0.91%; in toluene: 0.67%.

Sodium salt, $C_9H_{14}N_3NaO_8S$. *SH 717, Glyconormal, Gocadafon, Lycanol, Redafon*. Crystals, mp 221-226°. Sparingly sol in alc. Soln in water at 37°: 70.5%. LD₅₀ in mice (g/kg): 1.48, 2.00 i.v.; 5.30, 2.85 orally, Kramer *et al.*, *Arzneimittelforsch.* 14, 377 (1964).

THERAP CAT: Antidiabetic.

4404. Glydon. *2-Heptadecyl-4,5-dihydro-1H-imidazol monoacetate; 2-heptadecylglyoxalidine acetate*; Crag, Fru Fungicide 341. $C_{22}H_{44}N_2O_2$; mol wt 368.59. C 71.68%, H 12.03%, N 7.60%, O 8.68%. Prepn from stearic acid and ethylenediamine: Kiff, U.S. pat. 2,540,171 (1951 to Union Carbide and Carbon).



Light orange crystals, mp 62-68°. d₂₀ 1.035. Insol in water, acetone, toluene; sol in isopropanol. The base is a solid, greasy wax, mp 94°.

USE: Fungicide.

4405. Glyoxal. *Ethanodial, bisformyl; diformyl; oxaldehyde*. $C_2H_2O_2$; mol wt 58.04. C 41.39%, H 3.48%, O 55.14%. OHCCCHO. Prepd by the oxidation of acetaldehyde by nitric or selenious acid: Lubawin, *Ber.* 8, 768 (1875); Wyss, *Ber.* 10, 1366 (1877); Kölpin, *Ann.* 416, 230 (1900); Riley *et al.*, *J. Chem. Soc.* 1932, 1881; Ronzio, Waugh, *Org. Syn. coll. vol. III*, 438 (1955); by hydrolysis of dichloroaceton: Butler, Cretcher, *J. Am. Chem. Soc.* 54, 2988 (1932). Review of commercial development: J. F. Bohm, *Ind. Eng. Chem.* 43, 786 (1951). Review: A. B. Boese *et al.*, *Glycols*, G. O. Curme, E. Johnston, Eds. (Reinhold, New York, 1952) pp 125-128.

-Yellow prisms or irregular pieces turning white on cooling. d₂₀ 1.14. Opaque at 10°, mp 15°; bp₇₆ 51°. The vapors are green and burn with a purple flame. Caution: Mixtures with air may explode! n_{D25} 1.3826. Sol in anhyd solvents. pH of a 40% aq soln: 2.1-2.7; d₂₀ 1.27. Polymerizes quite readily on standing, on contact with water (violent reaction) when dissolved in solvents contg water. The anhyd polymer changes to the monomer on heating. Solns of the monomer are obtained on heating the polymer with anethole, phenetole, saffrole, methyl nonyl ketone, or benzaldehyde. LD₅₀ orally in rats, guinea pigs: 2020, 760 mg/kg; H. Smyth *et al.*, *J. Ind. Hyg. Toxicol.* 23, 259 (1941).

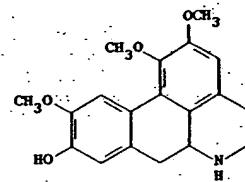
Dihydrate, (OHCCCHO)₂·2H₂O, cryst powder, nonhygroscopic. More sol in hot water than in cold water. Commercially available in anhyd form as cryst dihydrate, or in 40% aq soln which may contain polymerization inhibitor.

Caution: Moderately irritating to skin, mucous membranes.

USE: In textiles, organic synthesis, glues, biocides.

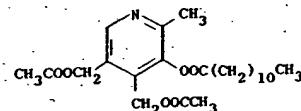
4406. Glyoxal-Sodium Bisulfite. *1,2-Dihydroxy-1,2-anidisulfonic acid disodium salt; glyoxal compound with sodium bisulfite*. $C_2H_4Na_2O_8S$; mol wt 266.16. C 9.02%, H 1.51%, Na 17.28%, O 48.09%, S 24.09%. Prepn: Ronzio, Waugh, *Org. Syn. coll. vol. III*, 438 (1955).

5258. Laurotetanine. *5,6,6a,7-Tetrahydro-1,2,10-trimethoxy-4H-dibenzo[de,g]quinolin-9-ol; 1,2,10-trimethoxy-6a- α -noraporphin-9-ol; Litsoine.* $C_{21}H_{21}NO_5$; mol wt 327.37. C 69.70%, H 6.47%, N 4.28%, O 19.55%. From the bark of *Litsea citrata* Blume (*Tetranthera citrata* (Blume) Nees), Lauraceae and allied plants. Isoln: Greshoff, *Ber.* 23, 3537 (1890); Filippo, *Arch. Pharm.* 236, 601 (1898). Structure: Barger *et al.*, *Ber.* 66, 450 (1933). Synthesis: Kikawa, *C.A.* 53, 17163i (1959).



Monohydrate, needles, mp 125°. $[\alpha]_D^{25} +98.5^{\circ}$. Practically insol in water; freely sol in alcohol, chloroform, ethyl acetate, slightly in ether.

5259. 3-O-Lauroylpyridoxol Diacetate. *Dodecanoic acid 4,5-bis(acetoxy)methyl-2-methyl-3-pyridinyl ester; lauric acid ester with pyridoxol diacetate (ester); 3-lauroyloxy-6-methyl-3,4-pyridinedimethanol diacetate; 3-lauroyloxy-2-picoline-4,5-dimethanol diacetate; 2-methyl-3-lauroyloxy-4,5-diacetoxymethylpyridine; Epixine; Rosamit.* $C_{24}H_{37}NO_5$; mol wt 435.54. C 66.18%, H 8.56%, N 3.22%, O 22.04%. Prepn: Belg. pat. 640,827 (1964) to Soc. Belge Azote Prod. Chim. Marly, *C.A.* 63, 587h (1965).



Crystals, mp 44°. Practically insol in water; sol in ether, chloroform, ethanol, ethylene dichloride.

THERAP CAT: Antiseborrheic.

5260. Lauryl Bromide. *1-Bromododecane; dodecyl bromide.* $C_{12}H_{23}Br$; mol wt 249.24. C 57.82%, H 10.11%, Br 32.06%. $CH_3(CH_2)_{10}CH_2Br$. Prepd by the action of hydrobromic acid on primary *n*-lauryl alcohol in the presence of sulfuric acid: Kamim, Marvel, *Org. Syn.* 1, 7 (1921).

Liquid. $b_{45}^{\circ}\text{C}$ 175-180°. Insol in water. Sol in alc, ether.

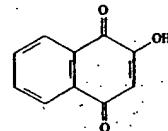
5261. Lavender. Garden lavender; true lavender. Flowers of *Lavandula officinalis* Chaix (*L. vera* DC.), Labiate. Habit. Mediterranean region. Constit. Volatile oil.

USE: For fumigating; in perfumery; to keep moths from clothes; manuf oil lavender. Pharmacutic aid (perfume).

5262. Lawrencium. Lr; formerly Lw; at. wt (longest-lived known isotope, $T_{1/2} \sim 3$ minutes) 260; at. no. 103; valence 3+. Known isotopes 255-260. Discovery of first isotope claimed by Ghiorso *et al.*, *Phys. Rev. Letters* 6, 473 (1961). Prepared by bombardment of californium with boron ions; originally assigned mass number 257; later changed to 258 ($T_{1/2}$ 4.2 seconds, α -emitter): Eskola *et al.*, *Phys. Rev. C* 4, 632 (1971). Prepn of ^{260}Lr ($T_{1/2} \sim 45$ seconds) by irradiating ^{239}Am with ^{10}O ions: Donets *et al.*, *At. Energ. (USSR)* 19, 109 (1965), *C.A.* 64, 1542c (1966). Prepn of isotopes 255-260 by bombardment of transuranium elements with heavy ions: Eskola *et al.*, *loc. cit.* Reviews of history, prepn and properties: C. Keller, *The Chemistry of the Transuranium Elements* (Verlag Chemie, Weinheim, English Ed., 1971) pp 609-612; Silvà, "Trans-Curium Elements" in *MFP Int. Rev. Sct.: Inorg. Chem.*, Ser. One vol. 8, A. G. Maddock, Ed. (University Park Press, Baltimore, 1972) pp 71-105; Ghiorso, *Handb. Exp. Pharmakol.* 36, 691-715 (1973); Taylor, *ibid.* 717-738.

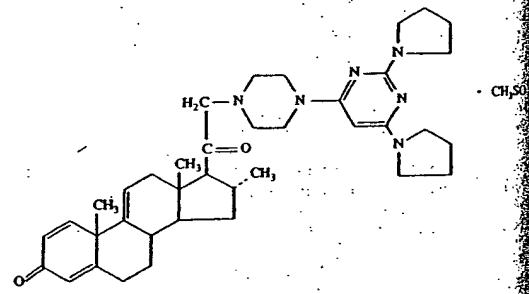
5263. Lawstone. *2-Hydroxy-1,4-naphthalenedione; 2-hydroxy-1,4-naphthoquinone.* $C_{10}H_8O_3$; mol. wt 174.15. C 68.96%, H 3.47%, O 27.56%. From leaves of *Lawsonia iner-*

mis L. and *L. alba* Lam., Lythraceae: Latif, *Indian J. Agric. Sci.* 29, No. 2-3, 147 (1959), *C.A.* 55, 14828g (1961). Synthesis: Fieser, *J. Am. Chem. Soc.* 70, 3165 (1948); Jamshedri, *Proc. Indian Acad. Sci.* 35A, 233 (1952); Eisen-Müller, *Ber.* 92, 2071 (1959).



Yellow prisms from acetic acid, dec 195-196°.
THERAP CAT: Ultraviolet screen.

5264. Lazaroids. Novel class of nonglucocorticoid 21-aminosteroid antioxidants which inhibit lipid peroxidation. A representative compound is known as U74006F. Prepn: J. M. McCall *et al.*, *PCT Int. pat. Appl.* 87 01,701 (1987 to Upjohn), *C.A.* 108, 6287u (1987). Inhibition of iron-dependent lipid peroxidation *in vitro*: J. M. Braughler *et al.*, *J. Biol. Chem.* 262, 10438 (1987). Endocrinological profile in mice: J. M. Braughler *et al.*, *J. Pharmacol. Exp. Ther.* 244, 423 (1988). HPLC determin in plasma: J. W. Cox, R. H. Pullen, *J. Chromatog.* 424, 293 (1988). In vivo attenuation of vasogenic brain edema: E. D. Hall, M. A. Travis, *Brain Res.* 451, 350 (1988). Effects on experimental head injury in mice: E. D. Hall *et al.*, *J. Neurosurg.* 68, 456 (1988); in post-traumatic spinal cord ischemia in cats: E. D. Hall, *ibid.* 462. Review of development and potential clinical applications in trauma and stroke: J. M. McCall *et al.*, *Acta Anaesthesiol. Belg.* 38, 417-420 (1987).



U74006F

U74006F, $C_{29}H_{36}N_6O_5S$, *21-[4-(2,6-di-1-pyrrolidinyl-pyrimidinyl)-1-piperazinyl]-16 α -methylpregna-1,4(9),11-triene-3,20-dione monomethanesulfonate*. Monohydrate, mp 181-185° (dec.). uv max: 234, 285 nm (ϵ 52000, 17000).

5265. Lazurite. Lapis lazuli; lazurite. Composition: $(Na, Ca)_4(AlSiO_4)_3(SO_4, S, Cl)$. E. S. Dana, *A System of Mineralogy* (John Wiley, New York, 6th ed., 1901) pp 432-433; S. Hurlbut, Jr., *Dana's Manual of Mineralogy* (John Wiley, New York, 17th ed., 1959) p 503.

Blue, blue-violet or greenish-blue, translucent, cubic dodecahedral crystals. d 2.4. Dec by HCl with pptn of S and evolution of H_2S .

USE: In manuf of vases, ornamental furniture, mosaic paints, jewelry.

5266. LBF. *Lactobacillus bulgaricus* factor. Growth factor occurring in products derived from both animal and plant sources and in culture filtrate of certain microorganisms: Williams *et al.*, *J. Biol. Chem.* 177, 933 (1949); Vining *et al.*, *Arch. Biochem. Biophys.* 34, 409 (1951); Peters *et al.*, *Am. Chem. Soc.* 75, 1688 (1953). Contains pantetheine which is oxidized during purification to the disulfide, pantethine q.v. Natural occurrence of several different forms LBF each being a mixed disulfide of pantetheine: Rasmussen *et al.*, *Proc. Soc. Exp. Biol. Med.* 73, 658 (1950); Brodin, Snell, *J. Biol. Chem.* 198, 375 (1952). Coenzyme A digests with intestinal phosphatase shows 2-4 LBF-active components: Long, Williams, *J. Bacteriol.* 61, 195 (1951). Re-